

Task-Involving and Ego-Involving Properties of Evaluation: Effects of Different Feedback Conditions on Motivational Perceptions, Interest, and Performance

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I designed this study to test the hypothesis that the impact of information about performance on subsequent intrinsic motivation depends significantly on the degree to which this information promotes a task-involved or an ego-involved motivational orientation. A total of 200 fifth- and sixth-grade students with high or low school achievement were given interesting divergent thinking tasks in each of three sessions. Individual comments, numerical grades, standardized praise, or no feedback were received after Sessions 1 and 2. Results confirmed that at Session 3 (posttest), interest, performance, and attributions of effort, outcome, and the impact of evaluation to task-involved causes were highest at both levels of achievement after receipt of comments. Ego-involved attributions were highest after receipt of grades and praise. These findings support the conceptualization of the feedback conditions as task involving (comments), ego involving (grades and praise), or neither (no feedback). The similar impact of grades and praise would not be predicted by cognitive evaluation theory. I discuss the importance of distinguishing between task- and ego-involved orientations in the study of continuing motivation.

In several recent articles, Nicholls (1979, 1983) distinguishes among three main kinds of task motivation, according to the primary goal or focus of behavior characteristic of each. In a conceptualization similar to that suggested by deCharms (1968), Nicholls defines task involvement as a motivational state in which an activity is perceived as inherently satisfying and in which the individual is concerned primarily with assessing and developing individual mastery in relation to task demands or prior performance. Thus, greater effort is expected to yield greater competence. In ego involvement, on the other hand, attention is focused primarily on assessing ability, which is perceived as a stable dimension of individual differences. Because such capacity can only be evaluated against the performance of others, ego involvement should promote a self-worth orientation in which one's main concern is to demonstrate high ability or mask low ability relative to others. Finally, extrinsic motivation is assumed to operate when an activity is undertaken as a means to some other end. Attention is thus focused primarily on attaining the desired goal, rather than on demonstrating either individual mastery or normative ability.

Nicholls (1984) has been concerned mainly with exploring the implications of task-involved and ego-involved motivation for immediate achievement behavior, whereas extrinsic motivation has been studied mainly within the context of research on the effects of incentives on subsequent interest (Lepper & Greene, 1978). In the present study, I attempt to bridge these traditions by suggesting that continuing interest

will also be differentially affected by task-involved and ego-involved orientations. More specifically, I argue that information about performance that focuses attention on task demands will promote task involvement and high subsequent interest. In contrast, information that focuses attention on the self will promote ego-involvement and lower subsequent interest even if it indicates high capacity.

Although conceptions of intrinsic motivation in terms of competence (White, 1959), self-efficacy (Bandura, 1982), or self-determination (deCharms, 1968; Deci, 1975) differ in several respects, they all emphasize that intrinsically motivated activities are undertaken without constraint and with the aim of improving learning and mastery. Both aspects seem more characteristic of task than of ego involvement. Thus one can predict that both interest and performance will be high as long as task involvement is maintained. Initial task involvement will probably depend on such task properties as novelty, challenge, and complexity (Berlyne, 1960; deCharms, 1968) and on the absence of salient extrinsic constraints (cf., Lepper & Greene, 1978). However, it should be maintained only as long as the task continues to be perceived as relevant to the ongoing development and assessment of individual mastery. Because many activities in both experimental and applied settings do not in themselves provide a basis for such self-evaluation of competence, continuing task-involvement should depend on the availability of individualized information relevant to forming performance goals and standards for self-evaluation (Bandura & Cervone, 1983). Moreover, one would expect intrinsic motivation to be maintained, at least in the short term, even when no further information is expected, because its provision in the past should have enhanced perceptions of the activity as relevant to developing mastery. In contrast, repeated nonreceipt of appropriate information about performance should undermine task involvement and result in lower levels of both interest and performance.

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However, not all kinds of information about performance will enhance task involvement. The normative grades prevalent in schools seem a clear example of information that focuses attention on the self by emphasizing outcome and social comparison, or both, rather than process or task mastery. Such information should promote an ego-involved orientation, where the activity is perceived as a means to the end of demonstrating high capacity rather than as satisfying in itself. Although Nicholls (1984) suggests that such an exogenous perception will in itself reduce interest, this reduction may not be marked as long as the individual expects outcomes to indicate high rather than low ability. However, when ego-involving information is no longer anticipated, both interest and performance should be undermined, because the activity will no longer be perceived as relevant to assessing normative ability. Thus, although perceived ability seems to mediate the effects of task- and ego-involving conditions on immediate achievement behavior (Nicholls, 1984), their effects on subsequent interest and performance should be similar at all ability levels.

This analysis may help to clarify certain anomalies in studies on continuing interest that have been guided by cognitive evaluation theory (Deci, 1975; Deci & Ryan, 1980). Deci argues that the effects of incentives on subsequent interest for an attractive task will depend both on the degree to which they are perceived as sources of control over behavior and on the degree to which they provide positive information about competence. The emphasis on external constraints is consistent with Nicholls's distinction among task, ego, and extrinsic involvement, and research findings provide consistent support for the hypothesis that controlling incentives will undermine later interest (see Morgan, 1984).

However, studies on the effects of positive information about competence have yielded mixed findings, in which such information has not always yielded higher interest than performance-contingent rewards that appear to be more controlling (Boggiano & Ruble, 1979; Harackiewicz & Manderlink, 1984; Rosenfield, Folger, & Adelman, 1980) or than control conditions that provided neither rewards nor information (Boggiano & Ruble; Boggiano, Ruble, & Pittman, 1982). One possible explanation is that researchers in such studies have not considered whether the positive information provided was task involving or ego involving. The informational incentives studied have almost always taken the form of ego-involving social comparison information indicating superior performance relative to others. Even treatments of nonspecific verbal praise (Anderson, Manoogian, & Reznick, 1976; Deci, 1971; Dollinger & Thelen, 1978) seem to be ego rather than task involving, because here too the focus seems to be on the self rather than on task demands and mastery (Brophy, 1981).

Thus, the conceptualization of treatments only along controlling and informational dimensions masks the basically similar, ego-involving properties of some forms of praise and socially comparative feedback. In addition, the effects of such incentives on subsequent interest have usually been inferred by comparison with controls who received neither rewards nor information, apparently on the assumption that their interest remained stable. Within the present framework, one

can hypothesize rather that interest and performance will be maintained or even enhanced by individualized comments that focus attention on task demands and mastery, but that they will be undermined when no feedback is received. In addition, information that focuses attention on self-worth, represented in this study by normative grades and by nonspecific praise, should undermine subsequent interest and performance, because the task will no longer be relevant to establishing one's capacity.

Further support for the argument that comments will promote task involvement; grades and praise, ego involvement; and no feedback, neither, can be sought by an examination of subjects' causal attributions. Although Butler and Nisan (1986) found some differences in attributions of effort and success after receipt of grades, comments, or no feedback, the various causes they offered were almost all internal, and thus inappropriate as a test of their interpretation that grades undermined interest because they were perceived as salient extrinsic cues. Similarly, Boal and Cummings (1981) criticize research generated by cognitive evaluation theory for failing to establish whether incentives that enhanced or undermined interest did indeed generate different perceptions of causality and competence. In contrast, findings that subjects attribute outcomes more to effort in noncompetitive settings and more to ability in competitive ones (Ames & Ames, 1981; Ames & Felker, 1979) provide some support for the notion that task involvement and ego involvement are different psychological states.

In the present context, one can hypothesize that subjects who receive individual comments will attribute outcomes more to task-involved factors such as interest, effort, and previous experience with the task, whereas subjects who receive grades or praise will emphasize ability and competition with others. Similarly, subjects who receive comments should attribute effort to interest and the desire to improve previous performance, whereas both grades and praise should increase the salience of desires to do better, or avoid doing worse, than others. In addition, task-involving information should be perceived by the subjects themselves as contributing primarily to interest and mastery, whereas ego-involving information should be perceived primarily as enabling them to assess their ability. Finally, the argument that nonreceipt of information will promote neither task nor ego involvement suggests that in this condition both task- and ego-involving factors will be perceived to undermine effort and outcome.

In the present study, fifth and sixth grade students classified as high or low achievers on the basis of their school grades were given divergent thinking tasks in each of three sessions. Subjects of those grade levels were chosen on the assumption that most of them would have achieved a differentiated concept of ability (Nicholls, 1978) and would thus be more differentially affected than younger children by task- and ego-involving conditions. In Session 1 (pretest), no evaluation was anticipated by subjects. In Session 2, Session 1 tasks were returned to the subjects with task-related comments, numerical grades, praise, or no feedback, and pupils were told that the new tasks would be returned to them with the same kind of feedback. In Session 3, Session 2 tasks were returned, but

subjects anticipated no evaluation for the new tasks. Interest and performance were measured after Sessions 1 and 3, and attributions after Session 3.

The general thesis that comments would promote task involvement, that both grades and praise would promote ego involvement, and that no feedback would promote neither yielded several specific hypotheses:

1. Attributions of effort, outcomes, and the effects of evaluation to task-involved factors would be highest after comments; attributions to ego-involved factors would be highest, and similar, after grades and after praise; and attributions to both kinds of causes would be lowest after no feedback.

2. Interest and performance at posttest (Session 3) would be higher after comments than after grades, praise, or no feedback. Interest and performance in the latter three conditions would be similar.

3. These effects for attributions, interest, and performance would occur at both high and low levels of school achievement.

Method

Subjects

The sample comprised 200 fifth and sixth grade Jewish Israeli pupils (106 boys and 94 girls, mean age 11.10 years) from 16 randomly selected classes (out of 23) in four city elementary schools serving predominantly middle-class populations. Four classes were randomly assigned to each of the four experimental conditions. Although all pupils participated in the experiment, data were analyzed only for 50 pupils in each condition, randomly selected from those whose average grade in language and mathematics on their most recent report card was in the top or bottom 25% for their class. Thus there were 25 high achievers and 25 low achievers in each experimental condition.

Instruments

Experimental tasks. The experimental task for both Session 1 and Session 3 consisted of two tasks taken from the divergent thinking uses test (Torrance & Templeton, 1963). The task for Session 2 consisted of the different circles test, which was selected in order to reduce boredom and practice effects. A pilot study established that pupils of this age found the tasks interesting and that the tasks used in Sessions 1 and 3, yielded equivalent levels of performance.

Interest Questionnaire After Session 1, pupils were given a short questionnaire and asked to rate their interest in and enjoyment of the tasks and the degree to which other pupils would find them interesting on 7-point scales anchored with *very, very interesting* (7) and *not at all interesting* (1). They were also asked to state how many additional tasks (from one to seven) they would like to receive. These questions were repeated after Session 3, when pupils were also asked to rate their perceived success on a 7-point scale.

Attributions questionnaire. After Session 3, pupils were asked to rate the degree to which various ego- and task-involved factors, which are presented in Table 1, affected effort, outcomes, and responses to the evaluation received. All ratings were made on 7-point scales, with 7 indicating higher ratings. For effort, pupils were asked to rate the degree to which various causes affected the effort they put into the tasks, with scales anchored at *greatly influenced my effort* and *did not*

Table 1
Factor Structure for Perceived Determinants of Effort and Outcome, and for Perceived Contribution of Evaluation Received

Measure	A priori definitions (task involved or ego involved)	Factor loadings	
		Factor 1	Factor 2
Attributions of effort to:			
Interest	Task		.83
Desire to improve past performance	Task		.81
Desire to do better than others	Ego	.86	
Desire to avoid doing worse than others	Ego	.87	
Percentage of variance accounted for:		41%	31%
Attributions of success to:			
Interest	Task	.65	.33
Effort	Task	.84	
Experience on Session 1	Task	.78	
Ability	Ego		.74
Other's outcomes	Ego	-.45	.70
Percentage of variance accounted for:		37%	27%
Contributions of evaluation to:			
Interest	Task	.88	
Enjoyment	Task	.86	
Improving past performance	Task	.72	
Tension reduction	Task	.50	.42
Ability evaluation	Ego		.88
Desire to succeed	Ego	.27	.73
Percentage of variance accounted for:		44%	21%

influence my effort at all. For outcomes, they were asked to rate the degree to which each of five causes influence success in the tasks (rather than their own success, because not all succeeded); the scales were anchored with *greatly influences success on these tasks* and *does not influence success on these tasks at all*. Pupils in the three feedback conditions were also asked to rate the degree to which their evaluation contributed to each of six factors; scales were anchored with *made a great contribution* and *did not make any contribution at all*

Feedback Conditions

The feedback given after Sessions 1 and 2 was as follows:

1. *Comments group.* Feedback consisted of one sentence, which included both a reinforcing and a goal-setting component and related specifically to the performance of the individual child. Typical comments, which did not include any information beyond that specified in the criteria for success given to all subjects in the general instructions, were as follows (translated from Hebrew): "You thought of quite a few ideas; maybe it is possible to think of more different ideas." "You thought of quite a few different ideas; maybe it is possible to think of more unusual, original ideas."

2. *Grades group.* Final performance scores for all pupils, including those of average ability, were computed as described below. These scores were then converted into grades in order to produce a normal distribution ranging from 40 to 99. Thus, high achievers tended to receive relatively high grades and low achievers relatively low ones.

3. *Praise group.* Feedback consisted of the phrase "very good."
4. *No-feedback group.* Pupils received no evaluation.

Procedure

The experiment included three sessions. Session 1 was conducted one day and Sessions 2 and 3 two days later, with an interval of 3 hr between them. Sessions were conducted during regular school hours by one of four undergraduate students. In Session 1 instructions, which were identical for each feedback group, it was explained that the experimenters had constructed some tasks and were interested in seeing how different children performed them and that they hoped that the children would enjoy doing them and using their imagination. Instructions for the uses task, adapted from Torrance and Templeton (1963), also included criteria for success (according to the number, variety, and originality of responses). After 10 min, the tasks were collected and the interest questionnaire distributed.

In Session 2, two days later, these tasks were returned. Subjects in the comments and praise groups were told that each had been given an appropriate comment on their performance. Subjects in the grades group were told that they had each been given a grade that showed how they had done relative to other pupils in the class, and subjects in the no-feedback group were told that their tasks were being returned. All subjects were instructed to look at the tasks to see how they had done, after which they would be given new tasks. Pupils in the comments and praise groups were told they would receive a comment on the new tasks too, pupils in the grades group that they would receive a grade, and pupils in the no-feedback group that the task would be returned. The circles task was then distributed, and the procedure followed as for Session 1.

In Session 3, 3 hr later, the circles task was returned with the evaluation appropriate for each group, and new examples of the uses task were given out. Subjects were given a few minutes to look through the previous task and were then told that there was enough time for them to try out some extra tasks, which the experimenters would not be able to return or to evaluate. After 10 min, the circles and uses tasks were collected and the interest and attribution questionnaires distributed. Pupils were then engaged in a discussion about the experiment.

Scoring

The uses tasks were scored according to the categories defined by Torrance and Templeton. Counts were made of the number of responses (fluency), categories (flexibility), elaborated responses, and original responses, in which originality was defined as a nonbizarre idea that appeared in no more than 10% of the protocols. A final score was computed from the sum of scores in each category over the two examples given in each of Sessions 1 and 3. Originality was given a weight of 2 and the other components a weight of 1. Tasks were scored by two judges working independently. Interrater correlations for final scores were high: $r = .91$ for Session 1, and $r = .93$ for Session 3.

Results

Attributional Patterns.

Some of the causes for which attributional ratings were requested were considered to reflect task-involved foci and some to reflect ego-involved foci (see Table 1). As a first step, the items for each question were subjected separately to a

principal components factor analysis with oblique rotation. This analysis yielded the hypothesized two factors for each question. The low correlations between the rotated factors ($r = .06$ for effort, $.12$ for outcome, and $.21$ for the contributions of evaluation) indicated that these factors were orthogonal. The hypothesis that items for each question would generate two factors reflecting task- and ego-involved foci, respectively, was tested by using a principal components factor analysis with varimax rotation. The analyses for each question yielded the hypothesized two factors, each with an eigenvalue greater than 1. Factor weights for items loading greater than $.25$ are presented as Table 1.

As indicated in Table 1, all items except for tension reduction loaded only on the hypothesized factor, supporting the conceptualized distinction between groups of items as reflecting task- and ego-involved motivational perceptions. Composite measures of task and ego involvement were then computed for each question. These measures consisted of simple, unweighted means over the relevant items, and excluded only the item relating to the role of the evaluation in tension reduction. Because preliminary analyses yielded no main or interaction effects for sex, ratings for each question were analyzed by using a $2 \times 4 \times 2$ multivariate analysis of variance (MANOVA), for two kinds of motivational orientation, treated as a within-subjects factor, four of feedback condition and two of school achievement. When the MANOVA yielded a significant interaction effect only for the interaction of motivational orientation with feedback condition, orthogonal planned contrasts were used to test the specific hypotheses that pupils who received comments would rate task-involved items higher and ego-involved items lower than ones who received grades or praise and that pupils who received no feedback would rate both kinds of items lowest.

Mean ratings for the task- and ego-involved composites for each question are presented in Table 2. The analysis for attributions of effort yielded the hypothesized significant effect for the interaction of feedback condition with motivational orientation, $F(3, 192) = 22.72, p < .001$. Nonsignificant effects for the remaining interactions and for school achievement supported the prediction that attributions of effort in the various groups would be similar at both levels of achievement. Orthogonal planned contrasts were then performed on the aggregate means over both levels of ability, which are presented in Table 3. The comparison for the task-involved composite confirmed that pupils who had received comments scored higher than pupils who had received grades and praise $F(1, 192) = 30.5, p < .001, MS_e = 2.61$, and that these pupils scored higher than pupils who had received no feedback, $F(1, 192) = 19.5, p < .001, MS_e = 2.61$. Although task-involved attributions were higher after pupils received praise than after they received grades, the difference was not significant. The contrasts for ego involvement confirmed that pupils who had received grades or praise rated these factors as more determinative of effort than did pupils who had received comments, $F(1, 192) = 25.58, p < .001, MS_e = 2.08$. However, although ego-involving factors were rated as somewhat more determinative of effort by pupils who received comments than by those who received no feedback, this difference did not reach significance.

Table 2
 Mean Ratings for Composite Task-Involved and Ego-Involved Determinants of Effort and Outcome and for Perceived Contributions of Evaluation by Feedback Condition and School Achievement

Measure	Comments group		Grades group		Praise group		No feedback group	
	High	Low	High	Low	High	Low	High	Low
Attributions of effort								
Task-involved composite								
<i>M</i>	6.16	5.76	4.00	3.86	4.88	4.92	2.70	3.66
<i>SD</i>	0.97	1.00	1.12	1.31	1.35	1.34	1.21	1.21
Ego-involved composite								
<i>M</i>	3.84	4.22	5.19	5.02	5.62	5.28	3.58	3.56
<i>SD</i>	2.01	1.54	1.89	2.08	2.00	1.60	1.67	1.08
Attributions of outcome								
Task-involved composite								
<i>M</i>	5.53	5.43	3.32	3.53	4.16	4.07	3.25	4.47
<i>SD</i>	0.95	0.95	0.86	1.15	1.22	1.10	1.05	1.87
Ego-involved composite								
<i>M</i>	4.44	4.26	5.63	5.94	5.64	5.58	5.06	4.46
<i>SD</i>	1.24	1.45	1.49	1.06	1.04	1.01	1.38	1.03
Contributions of Evaluation								
Task-involved composite								
<i>M</i>	5.55	5.63	3.42	2.86	3.36	4.12		
<i>SD</i>	1.15	1.07	1.43	1.16	1.21	1.13		
Ego-involved composite								
<i>M</i>	5.40	4.98	6.10	5.57	5.06	5.82		
<i>SD</i>	1.11	1.48	1.67	1.06	1.67	1.23		

Because the analysis for attributions of success yielded an unexpected significant effect for the three-way interaction of motivational orientation with feedback condition and school achievement, $F(3, 192) = 6.03, p < .001$, separate 2×4 MANOVAS were conducted within each level of school achievement. The analyses for both high and low achievers yielded the hypothesized significant interaction for motivational orientation with feedback condition, $F(3, 96) = 27.49, p < .001$, and $F(3, 96) = 44.21, p < .001$, respectively. As hypothesized, pupils who had received comments attributed success more to task-involved factors and less to ego-involved factors than did ones who received grades or praise, $F(1, 96) = 29.4, p < .001, MS_e = 1.77$ and $F(1, 96) = 22.89, p < .001, MS_e = 1.04$

for high achievers, and $F(1, 96) = 27.33, p < .001, MS_e = 1.62$ and $F(1, 96) = 35.05, p < .001, MS_e = .71$ for low achievers. The main difference between high and low achievers lay in the effects of no feedback on their perceptions of the determinants of success. Although the ratings of high and low achievers in the other feedback conditions were very similar, after no feedback high achievers rated ego-involved factors as more determinative of outcome than did low achievers, whereas attributions of success to task-involved causes were higher among low achievers (see Table 2).

As hypothesized, the analysis for ratings of the perceived contribution of the evaluation to task- and ego-related factors (for three rather than four levels of feedback condition) yielded a significant interaction effect only for the interaction of motivational orientation and feedback condition, $F(2, 192) = 65.66, p < .001$. Planned contrasts on aggregate means over both levels of achievement (see Table 3) confirmed that for task involvement, ratings were highest after receipt of comments, $F(1, 192) = 57.5, p < .001, MS_e = 2.55$, and there was no significant difference in ratings after receipt of grades or praise. Neither of these comparisons was significant for ego involvement, indicating that pupils in all groups viewed their evaluation as having made a fairly similar contribution to their ability assessment and desire to succeed.

In conclusion, with this exception, the results for all questions together supported the hypotheses that comments would promote task-involved perceptions, that grades and praise would promote similar and ego-involved perceptions, and that no feedback would promote neither. In addition, they confirmed that the motivational perceptions of high and low achievers were similar within each condition, although no feedback was more task involving and less ego involving for low than for high achievers.

Table 3
 Group Means for Selected Dependent Variables Over Both Levels of Achievement

Measure	Comments	Grades	Praise	No feedback
Attributions for effort				
Task-involved composite	5.96	3.93	4.90	3.18
Ego-involved composite	4.03	5.10	5.45	3.57
Contributions of evaluation				
Task-involved composite	5.59	3.14	3.74	
Ego-involved composite	5.19	5.83	5.44	
Perceived interest	6.56	4.44	5.78	4.24
Extra tasks requested	5.42	3.38	4.14	3.56
Perceived success	5.66	4.57	6.10	5.08

Interest

The three interest questions that were similar (how interesting and how enjoyable did you find the tasks? How interesting will other pupils find them?) were highly correlated: $r_s(200) = .72$ to $.81$ for Session 1, $r_s(200) = .74$ to $.82$ for Session 3. Thus, ratings for these items were combined into a single measure of perceived interest for each session. The somewhat different question asking how many additional tasks pupils would like to receive was analyzed separately. Mean ratings for these two measures at Session 1 (pretest) and Session 3 (posttest) are presented in Table 4. Preliminary 4×2 analyses of variance (ANOVAs) confirmed that there were no significant main or interaction effects for feedback condition or school achievement on Session 1 interest ratings.

Posttest interest was analyzed by using 4×2 analyses of covariance (ANCOVAs), with Session 1 ratings as the covariant. Both analyses yielded a nonsignificant effect for the covariant, indicating that over the sample as a whole, posttest interest was not related to pretest interest. The planned comparison for mean ratings of perceived interest over both levels of achievement (see Table 3) indicated that interest was higher after receipt of comments than after receipt of grades, praise, and no feedback combined, $F(1, 191) = 22.93, p < .001, MS_e = 0.95$. However, pupils who received praise expressed more interest than those who received grades or no feedback. The ANCOVA also yielded an unexpected significant effect for the interaction of feedback condition with school achievement, $F(3, 191) = 3.90, p < .05$. As indicated in Table 4, although the perceived interest of low and high achievers was similar within the comments, grades, and praise groups, low achievers expressed more interest than high achievers after receiving no feedback.

The analysis for the question asking how many extra tasks pupils would like to receive supported the hypothesis, because it yielded only a significant main effect for feedback condition,

$F(3, 191) = 66.66, p < .001$. As hypothesized, pupils who had received comments requested more tasks than ones who had received grades, praise, or no feedback, $F(1, 191) = 109.8, p < .001, MS_e = 1.79$. The mean numbers of requests in the latter groups were very similar (see Table 3).

Perceived Success

After Session 3, pupils were asked to rate their perceived success on the tasks, mainly in order to establish whether the standardized praise was perceived as positive information about competence. Table 4 indicates that, as hypothesized, the perceived success of both high and low achievers was highest after praise. Although high achievers tended to rate their success higher than did low achievers in all conditions, a 4×2 ANOVA yielded only a significant main effect for feedback condition $F(3, 192) = 27.64, p < .001$. Duncan's multiple range test for post hoc comparisons between means over both levels of school achievement (see Table 3) indicated that pupils who received praise or comments rated their success significantly higher ($p < .05$) than did ones who received grades.

Performance Measures

Mean final scores for the uses task on Sessions 1 and 3 for each level of achievement within each feedback condition are presented in Table 5. A two-way ANOVA by feedback condition and school achievement for final scores on Session 1 yielded only a highly significant main effect for school achievement, $F(1, 192) = 174.9, p < .001$. This analysis confirmed that high achievers scored higher than low achievers.

Final scores for the posttest Session 3 were analyzed by using a 4×2 (Feedback Condition \times School Achievement) ANOVA. An ANCOVA with Session 1 scores as the covariant

Table 4
Mean Ratings for Perceived Interest and Success by Feedback Condition and School Achievement

Measure	Feedback Condition							
	Comments		Grades		Praise		No feedback	
	High	Low	High	Low	High	Low	High	Low
Perceived interest								
Session 1								
<i>M</i>	6.07	6.12	6.31	6.17	5.91	5.77	6.11	6.29
<i>SD</i>	.93	.92	.85	.83	.94	1.06	.94	.70
Session 3								
<i>M</i>	6.64	6.52	4.49	4.40	5.61	5.74	3.69	4.79
<i>SD</i>	.41	.61	1.13	1.09	1.03	1.18	.90	.87
Extra tasks requested								
Session 1								
<i>M</i>	5.90	5.84	6.13	5.84	5.68	5.78	6.12	6.00
<i>SD</i>	1.23	1.34	.90	1.11	1.03	1.27	1.09	.97
Session 3								
<i>M</i>	6.48	6.12	3.50	3.32	3.76	4.52	3.32	3.80
<i>SD</i>	.72	1.29	1.53	1.38	1.96	2.06	1.18	1.26
Perceived success								
Session 3								
<i>M</i>	5.72	5.40	4.89	4.36	6.20	6.00	5.12	5.04
<i>SD</i>	1.25	1.32	.89	1.01	1.11	.97	1.35	1.27

Table 5
Means for Final Performance Scores on Session 1 and Session 3 by Feedback Condition and School Achievement

Measure	Feedback condition							
	Comments		Grades		Praise		No feedback	
	High	Low	High	Low	High	Low	High	Low
Final scores								
Session 1								
<i>M</i>	19.54	10.16	19.28	10.28	19.68	9.92	19.48	10.00
<i>SD</i>	4.20	3.35	5.05	6.48	6.47	5.04	5.36	3.36
Session 3								
<i>M</i>	25.04	14.92	14.92	7.32	13.60	9.96	11.76	8.36
<i>SD</i>	5.22	5.23	6.06	2.84	4.38	3.76	5.42	2.69

was not used because of the differences between performances at high and low levels of school achievement. The ANOVA yielded a highly significant main effect for feedback condition, $F(3, 192) = 72.49, p < .001$, with comments yielding higher scores within each level of achievement than grades, praise, or no feedback. However, the analysis also yielded an unexpected significant effect for the interaction of Feedback Condition \times School Achievement, $F(3, 192) = 7.55, p < .001$. This effect (see Table 5) derived mainly from the finding that although low achievers who received comments scored higher than high achievers in the other conditions, the greatest discrepancy between the scores of high and low achievers was in the comments group. In addition, high achievers scored somewhat higher after receipt of grades than after receipt of praise, whereas low achievers scored higher after praise.

Discussion

Discussion of the results focuses on three main issues: the contribution of attributional patterns to an understanding of the motivational states of task and ego involvement, the degree to which use of the task-ego distinction is preferable to use of cognitive evaluation theory in interpreting the results for interest and performance, and the implications of our findings that the feedback conditions affected high and low achievers in similar ways. The results first of all confirmed that different kinds of feedback do seem to promote different motivational orientations. Analysis of subjects' responses to questions about their perceptions of the determinants of effort and outcome and of the motivating effects of the evaluation they had received yielded a very consistent two-factor solution. This solution reflected the hypothesized similarity between task-involved foci on factors such as interest, enjoyment, effort, and the assessment and improvement of past performance on the one hand, and ego-involved foci such as normative ability and the desires to achieve successful outcomes or avoid unsuccessful ones relative to others on the other. These findings are significant in themselves, because they provide direct, empirical confirmation of the distinctions drawn by Nicholls (1983) between the psychological states of task involvement and ego involvement.

Hitherto these distinctions have been based largely on theoretical considerations and on post hoc analyses of previous research on achievement motivation (Nicholls, 1984).

However, most such research has compared ego-involving with neutral rather than with clearly task-involving conditions and has tended to focus on task choice and performance rather than on motivational perceptions per se. Although in some studies (Ames & Ames, 1981; Ames & Felker, 1979) attributions of outcome under task- and ego-involving conditions have been examined, the present study included a broader range of relevant causes than the customary effort and ability. In addition, our results indicated that perceptions of the determinants of effort and of the motivational impact of information also seem to reflect the conceptualized distinction between task- and ego-involved foci. Finally, they revealed that attributions to interest and enjoyment were indeed more closely related to effort than to ability attributions, which Nicholls (1979, 1984) defines as the cornerstones of task- and ego-involved conceptions of ability, respectively.

The present results further confirmed that individual comments yielded higher task-involved perceptions and lower ego-involved ones than either grades or praise and that no feedback yielded perceptions of both kinds of factors as being relatively nondeterminative of both effort and outcome. The similar and ego-involved perceptions induced by grades and praise seem particularly significant. Both anecdotal evidence (Holt, 1964) and some research findings (Harter, 1978; Maehr & Stallings, 1972) suggest that grades are perceived as potent sources of control over learning. Similarly, Butler and Nisan (1986) interpreted their findings that grades undermined subsequent interest relative to comments in terms of the former's salient instrumental properties. Verbal praise, on the other hand, has been typically conceptualized as a condition that should enhance interest by providing noncontrolling, self-enhancing information about competence (Anderson, et al., 1976; Deci, 1971). Thus within the framework of cognitive evaluation theory (Deci, 1975) one might predict that grades will induce an extrinsic orientation that should undermine subsequent interest, whereas intrinsic motivation will be maintained after praise. Furthermore, this approach might even predict higher interest after praise or no feedback than after comments, because the comments provided here seem at least as controlling as phrases such as "Good. You should keep up the good work," which Ryan (1982) found to undermine interest. In addition, they provided mixed rather than clearly self-enhancing, positive information.

These predictions were not supported either by the results for subjects' attributions or by the findings for subsequent

interest and performance. The motivational perceptions of pupils who received comments emphasized task-involved foci, and these pupils expressed most interest and scored highest on divergent thinking at posttest. These effects are consistent with the theoretical framework developed above. If comments maintain task involvement, interest should remain high and performance should continue to improve, at least in the short term, even when comments are withdrawn, because their receipt in the past will have both enhanced perceptions of the task as relevant to competence development and facilitated the formation of internal standards and goals for evaluating and guiding performance. In another study (Butler, *in press*), I found that specific increases in convergent and divergent scores from pre- to posttest reflected the goal-setting content of comments received on pretest performance. However, subsequent performance decreased and was unrelated to comment content when comments were given in conjunction with grades. Thus, maintaining interest or task involvement seems necessary for effective utilization of informational cues or challenges to perform better.

The task-ego distinction also seems to provide a more satisfactory framework than cognitive evaluation theory for interpreting the effects of grades and praise on interest and performance. The findings for attributions indicated that both praise and grades induced a similar, ego-involved motivational orientation. Although the finding that subjects who received praise rated perceived interest higher than ones who received grades seems consistent with cognitive evaluation theory, the latter students did not request more tasks. Higher perceived interest after praise may have reflected greater enjoyment of the tasks, possibly as a function of lesser evaluative anxiety. However, their volunteering for additional tasks seems to reflect greater commitment, and has also been shown to load higher on an intrinsic motivation factor, than both expressed interest and a free choice measure (Harackiewicz, 1979). In addition, although comments yielded a slight increase in interest at post- as compared with pretest, in all other conditions, including praise, interest was far lower in Session 3 than in Session 1. Thus, one can conclude that praise did not yield higher subsequent intrinsic motivation than grades and did not even maintain initial interest at its baseline level. This observation is important in view of deCharms's (1983) criticism of typical intrinsic motivation designs for comparing conditions only at posttest and failing to provide baseline data that could clarify their effects over time.

The hypothesis that task motivation will decline when ego-involving information is no longer anticipated was also supported by the findings that subsequent performance declined after both grades and praise. Moreover, this pattern occurred even when previous evaluation was self-enhancing, as for high achievers who received grades or for all of the subjects who received praise. These results reinforce the reservations that were noted earlier as to the use of normative information about performance or praise as intrinsic motivational conditions in many studies. They imply further that positive information about competence will not enhance interest if it is given in such a way as to promote ego rather than task involvement.

This last observation is of interest, because perceived ability has been identified as a major mediator of the impact of ego-involving, but not task-involving, settings on immediate achievement behavior. In addition, cognitive evaluation theory would seem to predict that self-enhancing, ego-involving information will not undermine subsequent interest. In this context, the present findings that comments enhanced interest and performance at both levels of school achievement extend Nicholls' (1984) conclusions about the beneficial effects of task-involvement at all levels of perceived ability to their continuing motivation as well. In addition, the general argument that each feedback condition would have similar, rather than different, effects on the perceptions, interest, and performance of both high and low achievers was also largely supported for the ego-involving conditions. This pattern occurred even for grades, in which, in contrast with the other conditions, high and low achievers also experienced different specific outcomes. Although this aspect of the design limits conclusions about the relative effects of the different feedback conditions at each level of achievement, it closely approximates experiences in the classroom, and can thus shed some light on the ways students respond to the grades they receive.

The findings that this experience undermined interest and performance for the low achievers who received low grades is hardly surprising in view of the familiar contention that low achievers are the main sufferers in competitive, ego-involving settings (Covington & Beery, 1976; Nicholls, 1984). However, the results revealed similar effects among the high achievers, who tended to receive high grades. Moreover, these able students also perceived intrinsic, mastery factors as relatively unimportant determinants of both effort and outcome. It is tempting to speculate that the socialization of high achievers in the comparative and competitive framework of the classroom so accustoms them to focusing on the ego-enhancing properties of their outcomes as to undermine their capacity for task-involved, self-regulated motivation. In this context, one can note that after no feedback high achievers expressed less interest than low achievers, and tended to rate task-involved factors as even less determinative of both effort and outcome. Although further research is clearly necessary to clarify the long-term effects of ego-involving evaluation, the present findings suggest that in such settings repeated success may undermine ongoing intrinsic motivation no less than repeated failure.

On a theoretical level, the results of this study suggest that motivational perceptions reflect the theoretical distinctions drawn by some researchers between task- and ego-involved motivational orientations. Moreover, these orientations have clearly different effects not only on those indexes of immediate achievement behavior to which they have usually been applied, but also on continuing self-regulated, or intrinsic, motivation as reflected by both interest and performance. Because these effects are not identical to those that have been predicted by Deci's (1975) influential cognitive evaluation theory, one can suggest further that distinguishing between task-involving and ego-involving settings may help to clarify both the anatomy of intrinsic motivation and the experimental manipulations appropriate to its investigation. Finally, the demonstrated role of information about performances in

shaping motivational approaches to a task is clearly relevant to educational policy and practice.

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